CLAIMS

Amend the claims as follows.

1. (Currently Amended) In a digital wireless receiver, a method of detecting the presence of a data packet in a received radio frequency (RF) signal, the method comprising:

down-converting ~~said~~the RF signal into in-phase (I) and quadrature (Q) baseband signals;

removing direct current (DC) offsets from the I and Q baseband signals;

modulating the I and Q baseband signals;

mapping the modulated I and Q baseband signals to a unit circle on a QPSK constellation;

comparing the mapped I and Q baseband signals to a reference signal via a complex correlator;

detecting a peak of the complex correlator output; and

in response to the peak being above a predefined threshold, indicating that a data packet has been received.

2. (Canceled)

3. (Currently Amended) The method of claim ~~2~~ 1, wherein ~~the~~ said detecting ~~further~~ comprises:

converting the complex correlator output from a complex value to a polar value;

calculating ~~the~~ a signal magnitude of the polar value; and

determining ~~if~~ whether a data packet containing information bits is present.

4. (Currently Amended) The method of claim 3, wherein ~~the~~ said calculating is performed using the formula (mag)^2.

5. (Currently Amended) The method of claim 4, wherein ~~the~~ said determining comprises employing a peak signal envelope detection technique.

6. (Currently Amended) The method of claim 4, wherein ~~the~~ said determining comprises:

comparing the signal magnitude to a minimum threshold; and,

indicating that a correct signature was received in response to the signal magnitude exceeding the minimum threshold.

7. (Currently Amended) In a digital wireless ~~digital~~ receiver, a circuit for detecting the presence of a data packet in a received radio frequency (RF) signal, the circuit comprising:

a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from the received RF signal; and

an acquisition module communicating with the DC offset module, wherein the acquisition module ~~comprising~~ comprises:

a M-ary phase shift keying (PSK) mapper to map the ~~DC offset~~ corrected I and Q baseband signals to a quantized QPSK signal constellation;

a complex correlator to receive input from the M-ary PSK mapper and to compare the mapped I and Q baseband signals to a reference; and

a detector to receive input from the complex correlator and to determine the presence of a correct signature.

8. (Currently Amended) The circuit of claim 7, wherein the detector comprises:

a complex to polar (C2P) converter to convert the output of the complex correlator into an amplitude and phase value;

a magnitude calculation module to determine a signal size of the converted output; and

a peak detection module communicating with the magnitude calculation module to determine the presence of information bits.

9 (Currently Amended) The circuit of claim 8, wherein the received RF signal comprises a quadrature amplitude modulated (QAM) signal.

10. (Canceled)

11. (Currently Amended) A method for detecting the presence of a data packet in a received quadrature amplitude modulated (QAM) radio frequency (RF) signal, the method comprising:

mapping the QAM RF signal to a quantized phase shift keying (PSK) constellation by:

removing direct current (DC) offsets from I and Q baseband signals derived from the received QAM RF signal;

modulating the I and Q baseband signals; and

mapping the modulated I and Q baseband signals to a unit circle on a QPSK constellation; and

processing in a matched complex correlator to detect the presence of a data packet by:

comparing the amplitude normalized I and Q baseband signals to a reference signal via a complex correlator;

detecting a peak of the complex correlator output; and

if the peak is above a predefined threshold, indicating that a data packet has been received.

12. (Canceled)

13. (Currently Amended) The method of claim ~~12~~ 11, wherein ~~the aid~~ said detecting ~~further~~ comprises:

converting the complex correlator output from a complex value to a polar value;

calculating ~~the~~ a signal magnitude of the polar value; and

determining whether a data packet containing information bits is present.

14. (Currently Amended) The method of claim 13, wherein ~~the~~ said determining comprises:

comparing the signal magnitude to a minimum threshold; and

indicating that a correct signature was received in response to the signal magnitude exceeding the minimum threshold.

15. (Currently Amended) In a digital wireless ~~digital~~ receiver, a circuit ~~to~~ for detecting the presence of a data packet in a received radio frequency (RF) signal, the circuit comprising:

a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from the received RF signal; and

an acquisition module to receive the corrected I and Q baseband signals and to perform map, compare, and detect functions in relation thereto to determine a presence of information bits associated with the data packet.

16. (Currently Amended) The circuit of claim 15, wherein the acquisition module comprises:

a M-ary phase shift keying (PSK) mapper to map the corrected I and Q baseband signals to a quantized QPSK signal constellation;

a complex correlator to receive input from the M-ary PSK mapper and to compare the mapped ~~I~~ I and Q baseband signals to a reference; and

a detector to receive input from the complex correlator and to determine ~~a~~ the presence of a correct signature.

17. (Currently Amended) The circuit of claim 16, wherein the detector comprises:

a complex to polar (C2P) converter to convert the output of the complex correlator into an amplitude and phase value;

a magnitude calculation module to determine a signal size of the converted output; and

a peak detection module communicating with the magnitude calculation module to determine ~~a~~ the presence of information bits.

18. (Currently Amended) The circuit of claim 17, wherein the received RF signal comprises a quadrature amplitude modulated (QAM) signal.

19. (Currently Amended) A quadrature amplitude modulated (QAM) receiver, comprising:

~~In a wireless digital receiver, a circuit for detecting the presence of a data packet in a received radio frequency (RF) signal comprising:~~

a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from a received radio frequency (RF) signal;

an acquisition module communicating with the DC offset module, wherein the acquisition module ~~comprising~~ comprises:

a M-ary phase shift keying (PSK) mapper to map the corrected I and Q baseband signals to a quantized QPSK signal constellation;

a complex correlator to receive input from the M-ary PSK mapper and to compare the mapped I and Q baseband signals to a reference; and

a detector to receive input from the complex correlator and to determine the presence of a correct signature ~~responsive to the complex correlator~~.

20. (Currently Amended) The QAM receiver of claim 19, wherein the detector comprises:

a complex to polar (C2P) converter to convert the output of the complex correlator into an amplitude and phase value;

a magnitude calculation module to determine a signal size of the converted output; and

a peak detection module communicating with the magnitude calculation module to determine the presence of information bits.

21. (Currently Amended) A quadrature amplitude modulated (QAM) receiver, comprising:

a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from a received radio frequency (RF) signal; and

an acquisition module to perform at least one of a map, compare, ~~and~~ or detect functions on the corrected I and Q baseband signals to determine ~~a~~ the presence of information bits associated with ~~the~~ a data packet.

22. (Currently Amended) The QAM receiver of claim 21, wherein the acquisition module comprises:

a M-ary phase shift keying (PSK) mapper to map the corrected I and Q baseband signals to a quantized QPSK signal constellation;

a complex correlator to receive input from the M-ary PSK mapper and to compare the mapped I and Q baseband signals to a reference; and

a detector to receive input from the complex correlator and to determine ~~a~~ the presence of a correct signature.

23. (Currently Amended) The QAM receiver of claim 21, wherein the detector comprises:

a complex to polar (C2P) converter to convert the output of the complex correlator into an amplitude and phase value;

a magnitude calculation module to determine a signal size of the converted output; and

a peak detection module communicating with the magnitude calculation module to determine ~~a~~ the presence of information bits.